Beyond Laboratory Walls: The Rewards and Challenges of Bringing Product Development into the Community

Aoife Mitchell
Dublin Institute of Technology

Introduction

In autumn 2015, as a final year undergraduate of Nutraceuticals for Health and Nutrition in Dublin Institute of Technology (DIT) in Dublin, Ireland, I was met with great curiosity upon learning about the option of completing my undergraduate final year, capstone research thesis through community-based research (CBR). It was something I had never heard of before and felt it would be an interesting way of both gaining valuable real-life experience through collaborative methods while completing a vital component of my degree.

Studying in the north, inner city of Dublin exposes a student to the rich and diverse communities in the surrounding areas. While considered a disadvantaged area, it has pockets of promising ventures and innovation with community growth at its core. One such venture is community development through the non-profit organization Desireland. This organization is headed by local people who are "connecting nature, people and place to promote health and well-being in Dublin's northwest inner city" through the regeneration of disused land, wildlife conservation, citizen-led programs, and reduction in food and crop wastage (Desireland 2012).

As a student studying in the north, inner city of Dublin, I am a member of that community and therefore the opportunity to work with these organizations is key to their mission of complete community involvement in creating better urban living. As a food science major, it was proposed that I collaborate with Desireland in conjunction with Students Learning with Communities (SLWC) to develop a blight resistant potato-based food product that is both environmentally and economically sustainable. We decided on potato chip production with the use of locally grown blight resistant potatoes and the reuse of locally sourced healthy oils in keeping with both my nutraceutical background and my community partners' environmental background. As a food science and nutraceutical major it was vital that a health aspect was incorporated into the project and this was done by choosing healthier oils and cooking methods. The oils chosen for the research were specifically selected for their low levels of saturated fat, making them a healthier choice than the oils typically utilized in potato chip production. It would be my responsibility to provide an appropriate oil/potato combination that was both environmentally sustainable, palatable, and had the potential to create profit that would be injected back into future community work. It was hoped that when the research was complete the production of the potato chips could be passed onto a community kitchen with the help of a Standards Operation Procedure (SOP) designed by me. This research would also pave the way for future undergraduate projects, as I was undertaking an initial step in product development; there are many other steps involved that would make great future projects for undergraduates. By collaborating on this product development project, both the community partner and I would gain mutual benefit in knowledge, experience, profit, innovation, and life skills learning as well as an appreciation of the culture and community we are both a part of.

Learning about Community-Based Research

At the beginning of this journey, I had an understanding of what community-based research was. I knew it involved collaboration, communication, integration of knowledge, and dedication in order to achieve an objective set by all parties (Wilding 2008). This was immediately evident upon my first collaborative meeting with my academic supervisor, a Students Learning with Communities coordinator and the community partner from Desireland. Community-based research is a shared research venture between an academic and a community partner in order to create an output or a service that will be of mutual benefit to all. It is about building on the strengths already evident in the community and using them to the best of their ability. CBR encompasses social change and whole community participation and contribution of expertise for the common good (Israel et al. 1998). It was clear, from our initial brainstorming of ideas and thoughts, that collaboration was going to be a key factor in this research, ensuring that both the community partner and I gained what we initially hoped to from the project. With the community partner's knowledge and the skills I had acquired through my scientific career thus far, this would be possible. At the time, I was preoccupied with ensuring that I had chosen the right avenue upon which to carry out my thesis. However, nearing the end of the research I had become determined to guarantee that the community partner would find something sustainable and useful in my research and I continued to be motivated by hoping to achieve a thesis of the highest standard.

A major element of my CBR project was the inclusion of several members of the community and others outside of the community. This included a chef from a local restaurant in the city who demonstrated the potato chip production process on a more industrial level, an organic farmer who was the source of the blight resistant potatoes in County Wicklow just outside of Dublin, and a grocer who provided a variety of oils previously used for transportation of olives and sundried tomatoes. All contributed greatly to the research and showed equal passion for the venture. It was important to include as many local people as possible and notify them of research happening locally. This, however, meant navigating a massive communication network which was often difficult and went far beyond a "traditional" final year project.

Learning from Community Based Research

Communication

As a process of more than four months, often communication dwindled between both parties and at points I felt the research was becoming less a novel method and more a traditional approach to research as I regularly worked alone. Communication routes included emails and meetings, which were often difficult due to various other commitments of all parties. Effective communication is key to community based research as this is the optimum method to ensure collaboration is continual. However, regardless of the lapses in communication, the objective of creating a crisp product from blight resistant potatoes and a carrier oil in an environmentally and economically sustainable way remained at the forefront of all my research and writing.

Leadership

Creating a product in conjunction with Desireland allowed me to see the process of product development from the beginning to an almost finished project while injecting ideas and making changes myself the entire journey. The research was my responsibility and I was

encouraged by both my academic supervisor and community partner to take hold of the research and develop it whilst still incorporating multiple perspectives into a single critical thinking process. It was a meaningful process and one which I felt was all consuming as the lead decision maker. However, I did not view this as a negative aspect of the research, but rather an opportunity to demonstrate determination and self-guidance.

Problem Solving

Problem solving became a major component of my research. Materials, methods and eventually taste-testers were not provided and consequently had to be sourced. This in itself was a massive learning curve. It provided me with the opportunity to think critically, manage time, organise meetings and navigate through endless possible materials, methods and contacts until a solution was achieved. In the midst of the research, this was often frustrating as I felt my classmates were receiving more assistance than me as they were participating in more traditional lab based research, but I realise now that I obtained invaluable experience from managing my own work. However, this often led to reservation with regards to my capability of running this project and the growing workload.

Self-Doubt

I asked myself *Is this worth the extra work and effort?* many times throughout the collaborative research process as it required a high level of commitment and time. I often wondered whether it was a positive experience to have so much obligation to the project with the objective to give the work to another party upon completion. For some time, it seemed counter-productive, but eventually I realized that this was the essence of future collaboration projects I would potentially work on. Partaking in a CBR project and contributing such efforts is similar to a work-related team approach whereby both the team and others benefit from it. Upon reflection, I feel it simply took time for me to see the benefits I was reaping from such as unusual experience, while still recognizing the challenges it can often yield.

Community-Based Research Challenges

Community-based research is challenging by nature as it recognizes a multiple number and sources of expertise including: the generalized knowledge of the community from an academic standpoint, the hands-on, real world expertise of community members, the scientific expertise of the students and academics, and the basic knowledge within the community on that area. Therefore seeing each other's perspective was often a test. My main goal was to complete my thesis at the highest standard with scientific methods and analysis, gaining a deeper understanding of my major field of study, while attempting to maintain the task set out. While the community organization, not unsurprisingly, was more focused on the end-product and its potential applications within the community as that is its overall aim as a community development cohort. Community-based research demands relationship building, mutual understanding, trust, and a middle ground whereby both parties are engaged and happy to communicate. As Strand and co-workers (2003, 80) suggested, community-based research requires "shifting of perspectives" and an understanding of what the community wants and how one can achieve this. Sharing the power of the project with equal appreciation for all parties' requests was the most challenging element of CBR. This obstacle was overcome with open channels of communication, continual updating, and compromise.

Community Aspect

Again, it has only been upon consideration that I have come to comprehend that the core of community-based research is allowing the community to be identified as a single unit (Bell et al., 2016) with contributors from all walks of life such as a student, a lecturer, a college officer, a community worker, chefs, restaurateurs, local proprietors and farmers all of which played vital roles in my CBR project. While demographically and indeed at times geographically all involved varied, the sense of community was always evident and the end goal clear.

While science and research is so often defined by work done behind the closed doors of a laboratory, CBR attended to social inequalities and broke down the typical marginalisation seen between scientists and community members. People I encountered through the process were interested and enthused by the work and the method of research which was reassuring and agreed that science should not be something misunderstood or hidden from the general public who benefit from it daily and so often ignite the research process.

As the project drew to a close, I was confident in the work I was to provide to the community partner. It was clear from the work carried out that there were great opportunities and possible venture underlying my results. Upon presenting my research as a whole, it was with great pride and indeed relief that the objective of the research was completed. Both I, my academic supervisor and our community partner see great potential in the future of the results that were uncovered from my work and I am assured that the success from this research will continue to be seen for some time within the community I worked directly with and indeed DIT. The success of this project and the method at which it was carried out will also continue to be of great benefit and advantage to me in the future.

Personal Development into the Future

Upon reflection, I was reminded of the characteristics that have been known to be attributed to DIT graduates including enterprising, engaged and effective. An enterprising graduate, being one of leadership, innovation and with the ability to collaborate. An engaged graduate with ethics and motivation and finally an effective graduate who is a strategic thinker and resilient in challenging situations. It is these attributes I feel I gained as a graduate having completed this community based research. Community based research allowed me be my own leader and creative director within a co-operative setting. It exposed me to a variety of people whose opinions, ethics and concerns I had to include in my work and with this in mind, kept me highly motivated. It involved critical thinking and problem solving which taught me to navigate through often difficult situations. I am confident in the ideals of a DIT graduate and feel this research has helped me greatly in achieving the high standards expected.

Conclusion

Community based research enhanced my self-awareness and my position in the community as a scientist. It gave me a great sense of community although I was working outside of my own locality. CBR highlighted the attitudes of the general public towards science to me, which can often be negative and misunderstood, and gave me an opportunity to bring science out of the lab and into the community where it could be appreciated and further integrated into everyday lives. It has given me the opportunity to learn valuable skills and gain the ability to integrate them into any future research I embark upon as a graduate.

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